HHS Public Access

Author manuscript

Res Social Adm Pharm. Author manuscript; available in PMC 2016 November 03.

Published in final edited form as:

Res Social Adm Pharm. 2013 ; 9(5): 498–502. doi:10.1016/j.sapharm.2013.06.012.

Pharmacy research on health literacy can contribute to national goals and health care system improvements

Cynthia Baur, Ph.D.* **[Office of the Associate Director for Communication]** and **Cindy Brach, M.P.P.**

Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, 1600 Clifton Rd. MS-E21, Atlanta, GA 30333, USA

Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services, USA

The publication of this special issue on dissemination, translation and evaluation of health literacy tools in pharmacy practice marks a significant accomplishment for the field. The U.S. Department of Health and Human Services released the *National Action Plan to Improve Health Literacy* (National Action Plan) in 2010.[1] Three years later, the number of articles in this collection indicates that pharmacists' awareness of and interest in health literacy issues are increasing. The articles contribute to the substantial evidence that limited health literacy is an impediment to safe, effective health care and positive health outcomes and extends that literature into pharmacy settings. We expect publication of these articles will significantly increase the number of pharmacists who are aware of the human and financial costs of limited health literacy and, we hope, will also increase their commitment to change pharmacy education, research, and practice to address health literacy issues.

In many ways, pharmacists are on the front lines of people's confusion with health information. Community, retail, and clinic-based pharmacists are the ones who often field people's questions about what and how to use medicines and are therefore well positioned to catch misunderstandings that can occur as frequently as 50% of the time.[2] Lacking a personal connection with a pharmacist or pharmacy staff is a predictor of non-adherence,[3] which (along with suboptimal prescribing, drug administration, and diagnosis) is estimated to cost $290 billion per year in medical spending.[4] According to an Institute of Medicine report, medication errors harm at least 1.5 million people each year, resulting in an estimated $3.5 billion in added health care costs plus unknown damage to the economy due to lost wages and productivity.[5] Because many of these errors are preventable, the report recommends specific steps that pharmacists and other health professionals should take to ensure that patients are fully informed about their drug regimens and to minimize chances of mistakes.

The *National Action Plan* also includes goals and strategies that pharmacists can use to protect patients and create positive change in pharmacy systems. The topics and studies in this special issue align most closely with the *National Action Plan* goals on accessible,

*Corresponding author. Tel.: +1 404 498 6411, Cynthia.baur@cdc.hhs.gov.

accurate, and actionable health information (Goal 1) and health literate health care services (Goal 2). Conducting the studies and publishing the results support other *National Action Plan* goals, including increasing the amount and quality of health literacy research and evaluation (Goal 6) and disseminating research and evaluation findings to inform practice (Goal 7). As a collection, the articles speak to the multiple goals and strategies that pharmacists must pursue to improve health literacy.

Three key points about health literacy underscore the articles in this special issue.

1. Effective health communication utilizes both the spoken and written word. Given the complexity of many conditions and treatments, we can't rely on a single mode of communication, no matter how clear, to convey meaning fully. Pharmacists must develop excellent oral and written health literacy skills so they can communicate with patients and assess the quality of patient education materials produced by others.

2. There are a number of health literacy tools that can help pharmacists implement health literacy practices, but implementation can nevertheless be difficult. Often health literacy action begins with undergoing an environmental assessment to identify areas for improvement, but even assessments can be challenging. No single tool may address all the health literacy issues in a given situation, and practitioners have to combine and refine the available tools to fit their environment. Evaluators of health literacy tools may need to expand their own toolkits to capture the complexity of a multi-tool intervention.

3. Even with their limitations, readability assessments can be a step on a path toward more productive provider–patient communication. Pharmacists can use the insight of readability scores to rethink how to communicate with patients and as a prompt to apply the "gold standard" of testing materials with the intended users of the information.

Several studies in this volume examine the comprehensibility of patient education materials, attesting to their continued importance as sources of critical health information for patients. The *National Action Plan* directs developers of patient materials to use clear communication techniques and design and test materials with the intended users. Studies by Wang and colleagues,[6] Montagne,[7] Smith and Wallace,[8] and Raynor's commentary[9] all support the value and necessity of clear communication and testing materials.

The findings from Wang et al[6] and Montagne[7] should cause us to reconsider some long-standing assumptions that readability formulas and pictograms result in universally comprehensible materials. Wang and coauthors' comparison of popular readability formulas to assess patient education materials reminds us of the limitations of these formulas and the need for contextual information when we use reading grade level. Although it is well known that different readability formulas produce different results, the authors' careful analysis shows how great the variation can be and explains why this variation matters to patients. When materials are incorrectly graded as easy to read, patients with limited health literacy may skip critical but difficult information or misunderstand it, increasing the likelihood of

mistakes with medicines. Montagne's review of pictogram research concludes similarly that pictograms produce widely variable interpretations, and there are few universally understandable images. Although a picture may be worth a thousand words, a picture may not be worth the same one thousand words with each person. Montagne proposes a model to develop pictograms that result in more consistent comprehension within and across audiences. Wang and colleagues' final reminder to test all patient education materials with the intended users applies equally to text as well as pictograms.

Smith and Wallace demonstrate the power of plain language to help patients read and understand directions. Using a handful of basic plain language techniques, they redesigned standard patient instructions for auto-injecting a biologic agent. They then tested the materials by asking patients to use either the standard or plain language version to explain the process. Although a pilot study with a convenience sample, their findings confirm similar results in other studies: even patients with adequate health literacy not only prefer plain language information but also are more successful using plain language information.

Raynor[9] describes the European example of mandatory patient-tested package inserts in all manufactured medicines. Although some criticize the way manufacturers have implemented user testing, Raynor says that there is little disagreement about the value of testing as a means to create more usable patient information. He suggests the U.S. and other countries also adopt mandatory user testing to make information more accessible to all.

The qualitative study by Hamrosi and colleagues[10] indicates the potential impact of written materials that do not meet Goal 1 aspirations of accurate, accessible and actionable health information. In Australia, clinicians reported that the poor quality and length of Consumer Medicine Information (CMI), which was to be dispensed with prescription medicine, caused many to refrain from distributing the information to patients. The silver lining of these findings is that clinicians were discerning differences between valuable and potential harmful information, and perhaps this feedback will lead to the improvement of the CMI.

Collum and colleagues' study[11] of patients' perceptions of pharmacists' use of health literacy strategies suggests one of the paradoxes of provider–patient communication. Research shows that provider–patient communication is more productive when providers use evidence-based strategies such as teach-back. But Collum and her colleagues found that patients at high risk for medication errors did not expect nearly as much from pharmacists as the effectiveness research suggests they should. The authors point out that part of the health literacy improvement agenda must include educating patients to raise their expectations for effective communication with providers.

The majority of articles in this special issue address Goal 2 of the *National Action Plan*, which promotes changes in the health care system that improve health information, communication, informed decision-making, and access to health services. It is a sign of progress in the health literacy field that researchers have moved beyond documenting deficiencies in communication and are exploring how to change what and how information is delivered.

Several articles highlight the important role pharmacy schools are playing to further health literate pharmacy practice. Pharmacy schools are beginning to adopt health literacy as a framework for training the next generation of pharmacists to be effective communicators. Health literacy has begun appearing on syllabi, and has become a topic of experiential education activities.

Chen, Noureldin, and Plake[12] report on the impact of a health literacy assignment (revising a patient medication information sheet) on 3rd year pharmacy students. They conclude that students became sensitized to the medical terminology that they had recently mastered and grasped the importance of using easy-to-understand language when talking to patients. A second article, Burghardt et al,[13] describes an investigation the authors conducted when they were students fulfilling their Pharm.D. research requirement. The researchers developed and tested an innovative intervention—educational board games played in a community pharmacy—on pharmacy patrons' advice-seeking behavior. Shoemaker et al[14] provides additional evidence of the important role pharmacy students can play in promoting health literacy in community pharmacies. They found that implementation of the Agency for Healthcare Research and Quality's (AHRQ) health literacy assessment tool was most successful in pharmacies that had available residents, students, or staff without full-time dispensing roles.[15] In light of this finding, the Shoemaker team went on to develop a set of pharmacy health literacy curriculum modules that serve as a plug- and-play resource for pharmacy faculty.[16]

The article by Shoemaker and colleagues[14] also highlights the challenges of implementing health literacy improvement in busy pharmacy settings, where the immediate demands of patient care frequently take precedence over time and investments in quality improvement. Similarly, O'Neal and her co-investigators[17] underscore the difficulties of increasing health literacy-sensitive practices at community pharmacies. A low-intensity training intervention did not produce overall increases in patient reports of health literacy practices by pharmacists (e.g., review of written information, teach-back).

O'Neal et al's study,[17] however, provides important lessons for tailoring health literacy tools to local conditions. The investigators found that to use the AHRQ Health Literacy Assessment to measure the impact of their training intervention, they had to modify the tool. The AHRQ tool had been developed in a hospital outpatient pharmacy setting, and several aspects were not applicable to or feasible in community pharmacies. Callahan and colleagues[18] provide another example of adaptation of a health literacy tool. The authors adapted AHRQ's Health Literacy Universal Precautions Toolkit, which was designed for primary care settings, for use in two subspecialties: rheumatology and cardiology. Having tested the tailored toolkits with rheumatology and cardiology practices, the authors posit that the toolkits—with their heavy emphasis on communication about medicines may be useful to pharmacists as well.

Devraj and Wallace[19] aim to provide a different kind of tailored tool for clinicians. Their work on developing the Chronic Kidney Disease Self-Management Knowledge Tool reflects an interest in patients' mastery of the body of knowledge they need to manage chronic kidney disease. Although not a measure of patients' health literacy, a knowledge test can

help assess how well clinicians are doing in communicating key self-management information in a way that patients can understand.

Even though many of the studies are pilot projects with small samples, the articles are important first steps for the pharmacy field's early forays into health literacy research. The frequent use of assessment tools in these studies indicate that, with adaptation, these off-the-shelf products can help identify likely bottlenecks in provider–patient communication and the causes of patients' confusion about medications and self-management of health conditions. Readability and practice assessments are natural beginning points to build awareness and understanding of health literacy problems, but investigators should quickly move on to intervention design and evaluation with larger samples and more controls.

The field is ripe to test interventions that transform pharmacy practices to improve health literacy. These interventions will be richer and more effective if they are based on theories of organizational and professional change and how health care systems function. The substantial existing research on medication errors and misunderstandings can inform meaningful changes in how health care organizations provide, explain, and monitor safe and effective medicine use. Similarly, health literacy education, training, and practice improvement tools can contribute to reorienting future and current pharmacists. But to create "health literate pharmacies," practitioners and researchers must collaborate in evidence-based redesign of the "pharmacies of the future." Our medication delivery systems must be designed to make clear communication easy rather than perpetuate confusion and errors. We can't rely on individual pharmacists' good will if the systems they operate in hamper their ability to promote the safe use of medicines. Pharmacists need supportive, accountable systems that foster and sustain productive partnerships with patients.

Acknowledgments

The findings and conclusions in this paper are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention, the Agency for Healthcare Research and Quality, or the U.S. Department of Health and Human Services.

References

1. U.S. Department of Health and Human Services Office of Disease Prevention and Health Promotion. National Action Plan to Improve Health Literacy. Washington, DC: 2010.
2. Schillinger, D.; Machtinger, E.; Wang, Frances; Rodriguez, M.; Bindman, A. Preventing Medication Errors in Ambulatory Care: The Importance of Establishing Regimen Concordance. Agency for Healthcare Research and Quality; Rockville, MD: 2005.
3. Langer Research Associates. Medication Adherence in America: A National Report Card. National Community Pharmacists Association; Alexandria, VA: Jun. 2013
4. New England Health Institute. Thinking Outside the Pillbox: A System-wide Approach to Improving Patient Medication Adherence for Chronic Disease. New England Health Institute; Cambridge, MA: Aug. 2009
5. Committee on Identifying and Preventing Medication Errors. Institute of Medicine of the National Academies. Preventing Medication Errors. National Academies Press; Washington, DC: 2007.
6. Wang L-W, Miller MJ, Schmitt MR, Wen FK. Assessing readability formula differences with written health information materials: application, results, and recommendations. Res Soc Adm Pharm. 2013; 9:503–516.

7. Montagne M. Pharmaceutical pictograms: a model for development and testing for comprehension and utility. Res Soc Adm Pharm. 2013; 9:609–620.
8. Smith MY, Wallace LS. Reducing drug self-injection errors: a randomized trial comparing a “standard” versus “plain language” version of Patient Instructions for Use. Res Soc Adm Pharm. 2013; 9:621–625.
9. Raynor DK. User testing in developing patient medication information in Europe. Res Soc Adm Pharm. 2013; 9:640–645.
10. Hamrosi KK, Raynor DK, Aslani P. Pharmacist and general practitioner ambivalence about providing written medicine information to patients – a qualitative study. Res Soc Adm Pharm. 2013; 9:517–530.
11. Collum JL, Marcy TR, Stevens EL, Burns CF, Miller MJ. Exploring patient expectations for pharmacist-provided literacy-sensitive communicaion. Res Soc Adm Pharm. 2013; 9:626–632.
12. Chen AMH, Noureldin M, Plake KS. Impact of a health literacy assignment on student pharmacist learning. Res Soc Adm Pharm. 2013; 9:531–541.
13. Burghardt KJ, Bowman MR, Hibino M, et al. Using educational games to promote the seeking of a pharmacist and to teach key medication use messages: results from an inner city health party. Res Soc Adm Pharm. 2013; 9:542–552.
14. Shoemaker SJ, Staub-DeLong L, Wasserman M, Spranca M. Factors affecting adoption and implementation of AHRQ health literacy tools in pharmacies. Res Soc Adm Pharm. 2013; 9:553–563.
15. Jacobson, KL.; Gazmarian, JA.; Kripalani, S.; McMorris, KJ.; Blake, SC.; Brach, C. Is Our Pharmacy Meeting Patients’ Needs? A Pharmacy Health Literacy Assessment Tool. User’s Guide. Agency for Healthcare Research and Quality; Rockville, MD: 2007. AHRQ Publication Number 07-0051
16. Shoemaker, S.; Staub-DeLong, L.; Wasserman, M.; Moss, D.; Brach, C. Advancing Pharmacy Health Literacy Practices Through Quality Improvement: Curricular Modules for Faculty. Agency for Healthcare Research and Quality; Rockville, MD: 2011. 12-M013-EF. (Prepared by Abt Associates, Inc., Under Contract No. 290200600011 TO5)
17. O’Neal KS, Crosby KM, Miller MJ, Murray KA, Condren ME. Assessing health literacy practices in a community pharmacy environment: experiences using the AHRQ Pharmacy Health LiteracyAssessment Tool. Res Soc Adm Pharm. 2013; 9:564–596.
18. Callahan LF, Hawk V, Rudd R, et al. Adaptation of the health literacy universal precautions toolkit for rheumatology and cardiology:m-DASH applications for pharmacy professionals to improve self-management and outcomes in patients with chronic disease. Res Soc Adm Pharm. 2013; 9:597–608.
19. Devraj R, Wallace LS. Application of the content expert process to develop a clinically useful low-literacy Chronic Kidney Disease Self-Management Knowledge Tool (CKD-SMKT). Res Soc Adm Pharm. 2012; 9:633–639.